Kyiv School of Economics & Kyiv Economics Institute

DISCUSSION PAPER SERIES

Cities in Transition

Oleksandr Shepotylo

Kyiv School of Economics and Kyiv Economics Institute

DP# 42 **September 2011**

Kyiv School of Economics and Kyiv Economics Institute
Yakira St. 13, 3d floor, 04119 Kyiv, Ukraine
Phone: (+380 44) 492-8012, Fax: (+380 44) 492-8011
Internet: www.kse.org.ua, www.kei.org.ua
E-mail: info@kse.org.ua

Cities in transition*

September 13, 2011

Abstract

Cities in transition face a unique set of challenges that came forth due to interplay of the legacy of socialist urban policies and transition to the market economy. The socialist urban policies restrained growth of the largest cities and distorted the spatial equilibrium towards more uniform distribution of urban population. The transition to the market economy reduces distortions but the convergence is slow. Housing market rigidities, inadequate urban infrastructure, and inconsistent government policies prevent people from moving to the largest cities.

1 Introduction

This study focuses on problems of urban development in countries of the Europe and Central Asia (ECA) region. The early stages of transition drew a substantial attention of researchers in urban economics.[1] However, the literature has relatively little to say about more recent developments that have occurred during the last decade. This paper starts filling the gaps by studying various dimensions of more recent urban developments in the region.

I analyze socialist urban policies that have a long-lasting effect on distribution of cities within countries of the region and on distribution of economic activities within the cities. For a long time, central planners had been restricting internal migration to and industrial production growth in the prime cities of the region, while encouraging development of the secondary cities. De jure, restrictions were softened in some countries and abolished in other countries with the fall of the communism. De facto, economic and political factors that prevent people from moving are still in place, as internal migration in the region remains at a very low level relative to Western Europe. As a result, convergence of the urban systems from the centrally-planned equilibrium to the market-based one is slow.

I further investigate factors that lower population mobility in the region. Using data from the Life in Transition Survey II, I identify that the housing market inefficiencies play a major role. A

*This research was supported by the Global Development Network (GDN) as part of the intra-regional research project on urban development in transition. I thank Tom Coupe, Randall Filer, Ira Gang, and participants of the 11th Annual Global Development Conference: Regional and Global Integration in Prague, 2010 for excellent comments and suggestions.

[1]See for example Alexeev (1988); Clayton and Richardson (1989); Bertaud and Renaud (1997); Buckley and Gurenko (1998); Gang and Stuart (1999); Buckley and Mini (2000).

standard deviation increase in the share of rented housing in the ECA region is associated with a 50 percent closing the gap in mobility between Western Europe and ECA, while a standard deviation increase in the share of mortgaged dwellings is associated with a 25 percent closing the gap in mobility.

Literature also mentions that absence of properly functioning land markets and poorly developed local governance further exacerbate the problem of low mobility and lead to spatial distortions of the distribution of economic activities within urban areas. In the market-based economy with efficiently functioning land markets, the land prices act as signals that help to recycle inefficient use of the valuable land within the city and replace it with more economically sound activities. Absence of land markets during the socialism resulted in the lack of the mechanism of land use recycling and replacement, which led to economically inefficient allocation of economic activities within the socialist city. Since the transition to the market economy has started, the land market emerged in all countries of the region, but the institutions regulating the land markets are still underdeveloped and lack the legislative base. Quick reformers in Eastern Europe that have created those institutions and developed the legislative base early on, were more successful in urban development, while slow reformers are still lagging behind, having difficulties to revitalize their urban areas.

Under-sized prime cities in the region relative to the prime cities in other parts of the world are a challenge for the policymakers. Larger cities are more attractive to skilled workers and investors due to positive externalities brought in play by the agglomeration forces. Therefore the findings presented in the paper lead to conclusion that the urban development policies in the region should be channeled towards increasing internal mobility of population by means of reducing inefficiencies in the housing market and developing market-based institutions that regulate land use within urban areas.

The rest of the paper is structured as follows. Section 2 focuses on urbanization and distribution of city sizes in the region. Section 3 discusses factors that distort the spatial equilibrium. Section 4 draws policy implications of under-urbanization. Section 5 concludes.

2 Urbanization and distribution of city sizes in the ECA region

Economic polices of the central planners during socialism were not favorable to development of large cities. According to Ofer (1976), in the 60's socialist countries were under-urbanized by about 9 percentage points relative to the OECD countries at the similar level of development. Ofer suggests that the under-urbanization was a result of the development strategy to maximize the rate of capital accumulation by suppressing rural-to-urban migration and diverting resources to development of the secondary cities. The replication of Ofer's methodology for 2008 demonstrates that currently the ECA countries have reached levels of urbanization similar to the OECD countries as Table 1 indicates.[2]

[2]While it is not possible to compare directly the degree of urbanization for some countries that do not exist any more, such as Czechoslovakia, the Soviet Union, and Yugoslavia, the table reports the population weighted averages of actual urbanization, estimated urbanization, and residuals for countries that were former members of above-mentioned

	Urbanization rate in 1960, %				Urbanization rate in 2008, %		
Country	Actual	Estimated	Residual	Country	Actual	Estimated	Residual
				Albania	47	56	-9
Bulgaria	38	50	-12	Bulgaria	71	63	8
Czechoslovakia	57	62	-5	Czech Republic	73	73	0
				Slovak Republic	57	71	-14
				Average	**68**	**72**	**-4**
East Germany	72	61	11				
Soviet Union	48	57	-9	Armenia	64	55	9
				Azerbaijan	52	60	-8
				Belarus	73	64	9
				Estonia	69	69	0
				Georgia	53	53	0
				Kazakhstan	58	63	-5
				Kyrgyzstan	36	43	-7
				Lithuania	67	68	-1
				Latvia	68	67	1
				Moldova	42	45	-3
				Russia	73	67	6
				Turkmenistan	49	57	-8
				Tajikistan	27	41	-14
				Ukraine	68	58	10
				Uzbekistan	37	43	-6
				Average	**64**	**61**	**3**
Hungary	40	55	-15	Hungary	67	69	-2
Poland	47	53	-6	Poland	61	67	-6
Romania	35	50	-15	Romania	54	65	-11
Yugoslavia	28	48	-20	Bosnia	47	57	-10
				Croatia	57	67	-10
				Macedonia	67	58	9
				Serbia	52	60	-8
				Slovenia	48	74	-26
				Average	**53**	**62**	**-9**
Overall	**47**	**56**	**-9**	**Overall**	**63**	**62**	**1**

Note: Urbanization rates for 2008 replication are from the World Bank. Real GDP per capita is from the Penn World Tables 7.0. The OLS regression is estimated on a sample of OECD countries and then predicted for the former socialist countries based on the following regression models
1960: UR=-35.71+13.93×log(Y) Adjusted R2=0.25 (Ofer, 1976)
2008: UR=-53.11+12.44×log(Y) Adjusted R2=0.10 (Author's calculations)

Table 1: Urbanization in ECA region relative to OECD countries in 1960 and 2008

2.1 Urbanization rate

To test formally whether countries of the ECA region[3] systematically differ in terms of urbanization from other countries, I estimate a linear regression model with urbanization rates regressed on the set of variables specified in Davis and Henderson (2003):

$$urbanization_i = \alpha + ECA_i\gamma + X_i\beta + \epsilon_i, \tag{1}$$

where *urbanization* is the share of the urban population in country i, ECA_i takes the value of one if country i belongs to the ECA region and zero otherwise; X is the vector of controls that includes log real GDP per capita, log population, openness to trade, landlocked dummy, log land area, voice and accountability indicator that captures the average level of democracy in country i in 1996-2008; ϵ_i is the independently distributed error term.

First, the regression is estimated on a cross-section of data for all countries in 1991, 1998, and 2008, presented in columns (1) - (3) of Table 2. Conditional on the level of economic development, population size, openness to trade, and geographic characteristics, the ECA countries do not systematically differ in the rates of urbanization. The coefficient of the log of GDP per capita is positive and significant in all regressions that confirms findings from the literature of the strong positive association between the level of economic development and urbanization.[4] Column (4) presents the random effect estimation of (1) on a panel of all countries in 1991-2008 with no significant change for the ECA coefficient.

According to Davis and Henderson (2003), urbanization is determined by a shift from agriculture to industry and modern services. Column (5) controls for the shift by including the share of agriculture to GDP and ratio of services to industrial production for a cross-section of countries in 2008, but those variables turn out non-significant. To address a concern that the result are driven by endogeneity of GDP per capita, column (6) reports coefficients of the regression for a cross-section of countries in 2008 with a five year lagged GDP per capita, which does not change the main conclusion. Finally, it might be argued that the ECA countries should be compared with a narrower sample of developing countries. We report results from two restricted samples in 2008: non-OECD countries in column (7) and low and middle income countries in column (8), but the main conclusion stays intact.

2.2 Primacy

While the urbanization rates in the ECA region conditional on development, institutions, and geography are not statistically different from the rates in other countries, the distribution of city sizes in the region deviates considerably at least in two important ways. First, the prime cities

countries.

[3] I excluded Mongolia and Turkey from the sample because these countries differ substantially in terms of urban development from the other countries of the region.

[4] See for example Acemoglu et al. (2002) for a discussion on evidence of the links between GDP per capita and urbanization.

	(1) 1991	(2) 1998	(3) 2008	(4) 1991-2008	(5) Ec. struct.	(6) Lag GDP per capita	(7) Non-OECD	(8) Poor and mid. income
ECA region	0.024	0.042*	-0.030	0.043	-0.010	-0.0080	-0.035	0.0025
	(0.026)	(0.023)	(0.022)	(0.034)	(0.024)	(0.022)	(0.026)	(0.026)
Log GDP per capita	0.15***	0.14***	0.12***	0.027***	0.10***		0.12***	0.11***
	(0.010)	(0.010)	(0.012)	(0.0088)	(0.023)		(0.014)	(0.017)
Log population	0.0017	0.0037	0.0037	0.12***	-0.0031	0.0029	0.0055	-0.023
	(0.010)	(0.010)	(0.011)	(0.013)	(0.013)	(0.011)	(0.014)	(0.015)
Log country area	0.010	0.011	0.013	-0.067***	0.024*	0.014	0.013	0.034***
	(0.0088)	(0.0091)	(0.0094)	(0.010)	(0.013)	(0.0096)	(0.011)	(0.011)
Landlocked	-0.055**	-0.060**	-0.076***	-0.092**	-0.046	-0.075***	-0.076**	-0.11***
	(0.024)	(0.024)	(0.024)	(0.043)	(0.029)	(0.024)	(0.031)	(0.030)
Openness to trade	0.028	0.036	0.042*	0.0039	0.011	0.041	0.040	-0.0058
	(0.033)	(0.033)	(0.025)	(0.0044)	(0.036)	(0.025)	(0.028)	(0.040)
Voice and accountability	-0.018	-0.017	-0.0055	0.074***	0.0031	-0.013	-0.0049	-0.012
	(0.014)	(0.013)	(0.014)	(0.018)	(0.019)	(0.014)	(0.018)	(0.018)
Agriculture to GDP ratio					-0.20			
					(0.28)			
Services to industry ratio					0.012			
					(0.016)			
5 year lag log GDP per capita						0.13***		
						(0.011)		
Constant	-0.93***	-0.84***	-0.70***	0.067	-0.61**	-0.72***	-0.72***	-0.60***
	(0.11)	(0.11)	(0.12)	(0.11)	(0.25)	(0.12)	(0.14)	(0.15)
Adjusted R^2	0.644	0.593	0.529		0.479	0.540	0.464	0.435
Overall R^2				0.18				
Observations	170	183	184	3457	150	183	157	134

Robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Notes: Regressions of the urbanization rates on the level of development, population, openness to trade, institutions, and geographical characterisitics. Data sources: urbanization rates are from the World Bank; GDP per capita, population, and openness to trade are from the Penn World Tables 7.0; area, landlocked are from the CEPII Geo Data; ECA dummy is equal to one for the ECA region countries.

Table 2: Urbanization rates

in the region are small relative to the prime cities in other parts of the world. Second, the whole distribution of city sizes is skewed towards medium-seized cities at the expense of larger cities.

To support the first claim, the following regression is estimated

$$prime_i = \alpha + ECA_i\gamma + capital_i\delta + X_i\beta + \epsilon_i \tag{2}$$

where $prime_i$ is the share of urban population living in the largest city in country i, $capital_i$ is a dummy variable that indicates whether the largest city is also a capital of the country, and other controls are the same as in equation (1). The regression is estimated on a cross-section of data for all countries in 1991, 1998, and 2008, presented in columns (1) - (3) of Table 3.

Unlike for urbanization rates, the largest city of the ECA region is 9.5 percentage points smaller than in the other regions for a cross-section of the prime rates in 2008.[5] This gap declines over time – from -14 percentage points in 1991 to -11 percentage points in 1998 to -9.5 percentage points in 2008 – but the rate of convergence in 1998-2008 slows down considerably. This finding is robust to different model specifications, time periods, and samples.

Column (4) presents the random effect estimation of equation (2) on a panel of all countries in 1991-2008 with the ECA coefficient of -0.11. Column (5) controls for the shift from agriculture to industry and services by including the share of agriculture to GDP and ratio of services to industrial production for cross-section of countries in 2008. Column (6) reports coefficients of the regression for cross-section of countries in 2008 with a five year lagged GDP per capita, which does not change the main conclusion. Finally, restricting the sample to non-OECD countries in column (7) and to low and middle income countries in column (8) does not change the conclusion that prime cities in the region are smaller than in other parts of the world.

2.3 Distribution of cities

I further look at the distribution of city sizes and its dynamics in several countries of the region during the 70's and 00's. The obvious first step in studying the within country distribution of city sizes is to test whether it satisfies the Zipf's law,[6] which is one of the most striking and robust facts established by urban economists. Gabaix (1999) argues that the Zipf's law naturally emerges if urban population in a country follows a proportional growth process. The proportional growth hypothesis, a so-called Gibrat's law, was tested for different regions and countries and in general was not rejected.

To check how well the distribution of city sizes in the ECA region fits the Zipf's law, I run a number of regressions

$$\ln(Size_i) = \alpha + \beta \ln(Rank_i) + \epsilon_i,$$

where S_i is size of city i and R_i is its rank within a country, for eight countries of the region –

[5] Davis and Henderson (2003) also find that the prime cities in the centrally planned economies are under-urbanized by 5 to 11 percent depending on the regression specification.

[6] The Zipf's law states that the number of cities with population greater than S is proportional to $1/S$: $Prob(Size_i > S) = \alpha \times S^{-1}$.

	(1) 1991	(2) 1998	(3) 2008	(4) 1991-2008	(5) Ec. struct.	(6) Lag GDP per capita	(7) Non-OECD	(8) Poor and mid. income
ECA region	-0.14***	-0.11***	-0.095***	-0.11***	-0.064**	-0.098***	-0.11***	-0.072**
	(0.031)	(0.025)	(0.029)	(0.022)	(0.026)	(0.029)	(0.030)	(0.032)
Capital	0.12***	0.11***	0.10***	0.095***	0.070***	0.10***	0.12***	0.096***
	(0.029)	(0.027)	(0.026)	(0.027)	(0.023)	(0.026)	(0.030)	(0.032)
Log GDP per capita	-0.023	-0.025*	-0.022	0.0049	-0.013		-0.019	-0.020
	(0.016)	(0.014)	(0.014)	(0.0089)	(0.018)		(0.016)	(0.015)
Log population	-0.043***	-0.044***	-0.044***	-0.074***	-0.064***	-0.044***	-0.036***	-0.063***
	(0.014)	(0.013)	(0.012)	(0.020)	(0.012)	(0.012)	(0.013)	(0.012)
Log country area	-0.018	-0.018*	-0.017	-0.0034	-0.011	-0.017	-0.020*	-0.0059
	(0.011)	(0.011)	(0.011)	(0.014)	(0.013)	(0.011)	(0.012)	(0.012)
Landlocked	-0.040	-0.029	-0.022	-0.013	-0.037	-0.024	0.019	-0.0081
	(0.034)	(0.028)	(0.029)	(0.027)	(0.026)	(0.029)	(0.032)	(0.030)
Openness to trade	0.062	0.053	0.050	0.0059	-0.044	0.052	0.083**	0.0020
	(0.048)	(0.057)	(0.042)	(0.010)	(0.034)	(0.042)	(0.035)	(0.035)
Voice and accountability	-0.013	-0.0093	-0.0078	-0.034**	-0.025	-0.0049	0.0031	-0.022
	(0.019)	(0.018)	(0.017)	(0.015)	(0.022)	(0.018)	(0.020)	(0.019)
Agriculture to GDP ratio					0.095			
					(0.16)			
Services to industry ratio					0.0019			
					(0.019)			
5 year lag log GDP per capita						-0.025*		
						(0.015)		
Constant	1.03***	1.07***	1.03***	0.95***	1.14***	1.05***	0.93***	1.09***
	(0.20)	(0.17)	(0.16)	(0.13)	(0.23)	(0.16)	(0.17)	(0.17)
Adjusted R^2	0.476	0.479	0.444		0.506	0.446	0.450	0.509
Overall R^2				0.46				
Observations	165	178	179	3359	145	178	153	130

Robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Notes: Regressions of the share of population living in the largest city on the level of development, population, openness to trade, institutions, and geographical characterisitics. Data sources: primacy rates are from the World Bank; GDP per capita, population, and openness to trade are from the Penn World Tables 7.0; area, landlocked are from the CEPII Geo Data; ECA dummy is eqaul to one for the ECA region countries; share of agriculture in GDP and ratio of services to industry are from the WDI.

Table 3: Primacy

	Belarus	Czech Rep.	Kazakhstan	Latvia	Hungary	Poland	Russia	Ukraine
Panel A: Zip's Law in 1979. Dependent variable is $\ln(Size_{1979})$								
$\ln(Rank_{1979})$	-0.873***	-1.119***	-0.937***	-0.686***	-1.119***	-1.113***	-1.017***	-0.966***
	(0.029)	(0.057)	(0.044)	(0.069)	(0.121)	(0.017)	(0.012)	(0.019)
Constant	12.307***	15.094***	13.502***	9.118***	15.149***	16.338***	16.648***	14.907***
	(0.317)	(0.593)	(0.462)	(0.725)	(1.267)	(0.179)	(0.130)	(0.203)
R^2	0.977	0.970	0.963	0.940	0.950	0.994	0.988	0.991
N	32	58	63	11	63	184	677	207
$H_0 : \beta = -1$	18.76	4.37	2.05	20.75	.98	45.11	1.95	3.25
p-value	.000	.041	.158	.001	.327	.000	.163	.073
Panel B: Zip's Law in 2007. Dependent variable is $\ln(Size_{2007})$								
$\ln(Rank_{2007})$	-0.839***	-1.165***	-0.875***	-0.709***	-1.139***	-1.156***	-1.009***	-0.954***
	(0.031)	(0.067)	(0.039)	(0.083)	(0.112)	(0.015)	(0.013)	(0.019)
Constant	12.176***	15.631***	12.892***	9.329***	15.323***	16.941***	16.674***	14.817***
	(0.340)	(0.701)	(0.419)	(0.880)	(1.173)	(0.157)	(0.135)	(0.204)
R^2	0.972	0.972	0.962	0.926	0.953	0.994	0.985	0.988
N	39	63	60	10	61	219	697	206
$H_0 : \beta = -1$	26.36	6.08	10.09	12.29	1.54	112.08	.49	5.74
p-value	.000	.016	.002	.008	.218	.000	.486	.018

* p<0.05, ** p<0.01, *** p<0.001. Robust standard errors are presented in parentheses.

Table 4: Zip's Law for selected ECA countries in 1979 and 2007

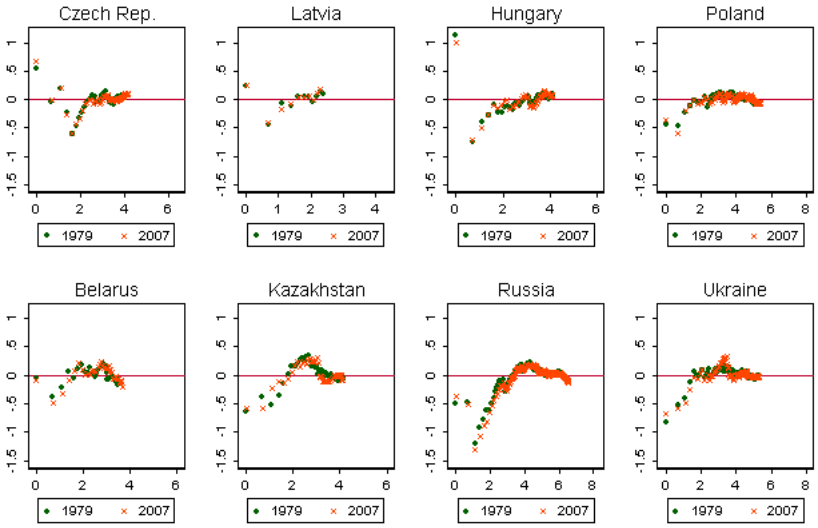
Belarus, the Czech Republic, Hungary, Kazakhstan, Latvia, Poland, Russia, and Ukraine – and for two time periods: 1979 and 2007. Data for population of the cities in 1979 are from the census. Data for population of the cities in 2007 are from the World Gazetteer database. [7] Only cities with population exceeding 20,000 inhabitants are included.

Results are presented in Table 4. To check whether the distribution follows the Zipf's law, the table reports F statistic and p-value of the Wald test $H_0 : \beta = -1$. The Zipf's law hypothesis is rejected in both periods for Belarus, Czech Republic, Latvia, and Poland. The hypothesis is also rejected for Kazakhstan and Ukraine in 2007. Only for two countries – Hungary and Russia – the Zipf's law hypothesis can not be rejected for both periods.

As the next step, I analyze the regression residuals. Figure 1 reports a panel of scatterplots of the residuals against $\ln(Rank_i)$ for each country and time period in the sample. The finding from the literature is that the largest city is usually a positive outlier – its size is larger than predicted by the Zipf's law (see, for example, Gabaix, 1999; Ades and Glaeser, 1995, for a political economy explanation to this stylized fact). However, it is generally not the case for the countries in the ECA region. In particular, the upper part of the distribution for the Commonwealth of Independent States (CIS) countries and for Poland considerably deviates from the power distribution and has the negative residuals. The deviation is the most pronounced for Russia, where the 30 largest cities have population below the levels predicted by the Zipf's law. At the same time, the secondary cities in the CIS countries and Poland tend to be positive outliers, which indicates larger than expected city sizes in the middle of the distribution. Also, there are no large and systematic differences between

[7] 2007 data is available at http://world-gazetteer.com. For Hungary and the Czech Republic the earlier samples are for 1980, for Poland the earlier sample is for 1981.

Figure 1: Zipf's regression residuals for selected countries



the 1979 and 2007 residuals, which is quite an unexpected result given the dramatic economic and political changes in the region between 1979 and 2007.

These preliminary observations on the peculiarities of the distribution of city sizes in the ECA region probably indicate a large and long-lasting impact of the socialist urban policies on the city growth rates. The concern with under-sized prime cities in the ECA region stems from the fact that the urban economies of scale in the region are not fully exploited, resulting in lower productivity per worker and lower wages in the region relative to urban agglomerations in other parts of the world. The loss of competitiveness due to lower urbanization transforms into lower economic growth (Henderson, 2003). Deichmann and Henderson (2000) compute that Poland's primacy rate, which is 5 percent below the optimal level, translates into 0.75 percent decline in economic growth. In the next section I discuss factors that explain under-population of the prime cities in the region.

3 Socialist urban policy and population mobility

A spatial location theory (SLT) is built around the idea that an individual is indifferent about living in a particular location or moving to another one. A higher income earned by the individual in primary cities relative to individuals in secondary cities is compensated by higher housing prices, higher transportation costs, and more congestion, which makes the primary cities as attractive as any other cities. The SLT crucially relies on efficient and properly functioning markets. The general equilibrium in spatial economic activities is achieved through three indifference conditions: workers are indifferent whether to stay in one location or to move to another, firms are indifferent whether to hire more workers or not, and construction firms are indifferent whether to build more houses in that location or not (Glaeser and Gottlieb, 2009). Those assumptions approximate realities of the US economy quite well. A high mobility of US population, high competition among firms, and

elastic supply of housing makes this model suitable for the analysis of the US economy. However, the likely violation of the underlying assumptions of the SLT for the ECA countries cast doubts on its applicability to analyze the distribution of population, housing, and firms in the ECA region countries and potentially can explain the stylized facts presented in the previous section.

Did the shock introduced by the central planners to the market equilibrium led to the irreversible shift in the equilibrium distribution of cities within countries of the ECA region which did not disappear after the policies had been removed? Several studies looked at historically provided sources of exogenous variation that would potentially address the question of the uniqueness of the market equilibrium. Davis and Weinstein (2002) tested the multiplicity of equilibria for city location that comes from the new economic geography models by looking at the impact of the bombing of Japanese cities on the spatial distribution of population and found little support for the multiplicity of equilibria. To the contrary, they found that the location fundamentals such as favorable geographic location play a major role in location of cities. Bosker et al. (2007) also presented empirical evidences in favor of the unique equilibrium based on German data. However, those studies have been criticized on the basis that those findings can not be conclusive due to the insufficient size of the shock. In addition, more evidence from other countries, especially from countries that have large territories, such as Russia would strengthen the results.

Mikhailova (2010), who studies the effect of the soviet regional policies, including the system of GULAG prisons and labor camps on development of urban settlements in Russia, finds that unlike Japanese and German urban systems, the USSR urban system has experienced a large and persistent shock, which still lasts in one-third of the urban settlements. In what follows, I review socialist urban policies and discuss factors that can explain why, unlike in Japan and Germany, urban systems in the post-socialist countries are more prone to multiplicity of equilibria. In particular, I focus on the effect of housing and land market rigidities and inefficient local governance.

3.1 Socialist urban policies and their impact on spatial equilibrium of cities

This section discusses socialist urban policies and their impact on migration and distribution of city sizes. I mostly focus on urban development policies in the Soviet Union, bearing in mind that other countries of the region had similar, albeit softer policies, taking into account local conditions and shorter period of time under the socialism. Ofer (1976) argues that the central planners intentionally checked rural-to-urban migration and industrial development of large cities and engaged in input substitution policy by keeping the capital-to-labor ratio in urban areas above the level of the market economies and by keeping the capital-to-labor ratio in rural areas below the level of the market economies. They did so to economize on costs that are incurred in urbanization when a migrant moves from the rural to urban area due to higher wages and higher consumption levels of the urban dwellers. All saved resources were further reinvested into the heavy industry production, a development strategy consistent with the idea that the capital accumulation is the major factor leading to the accelerated economic growth.

Migration restrictions in the Soviet Union worked through the system of internal passports[8] and through the residence authorization system (so-called "propiska"). Both the internal passport and the authorization stamp were legally required to get a job in a number of large metropolitan areas, with the strictest enforcement in Moscow, St. Peterburgh, and republican capitals of the Soviet Union. The institution of "propiska" has created a dualistic structure of population in restricted cities where the population split into legal and illegal residents with discriminated access to public goods, local amenities, state-provided housing, and jobs. Gang and Stuart (1999) estimate the effectiveness of the migration restrictions by looking at the differences of urban population growth rates between restricted and unrestricted cities in Russia and find that the restricted cities grew approximately at a twice lower rate relative to the unrestricted cities in all decades between 1960's and 1980's. Clayton and Richardson (1989) further find the evidence that the restrictions were more strictly enforced in larger cities,[9] which led to below natural rate of growth in the prime cities and consequent deviation from the Zipf's law. Migration controls imposed in the most attractive for migrants parts of the Soviet Union created a disequilibrium in the spatial distribution of the population (Gang and Stuart, 1999; Iyer, 2003), which currently slowly corrects itself by the above the average migration flows to the largest cities.

The development and growth in the unrestricted cities – by and large small- to medium-sized cities with population in a range 200-500 thousands people, often in remote and underdeveloped areas – was promoted through channeling investments in industrial and infrastructure development of those cities. The Soviet urban policy also promoted an eastward migration of population to Ural and Siberia regions. According to the WorldBank (2009), the share of GDP produced by the Eastern regions of the Soviet Union had increased from 4 percent in 1925 to 28 percent in the 1980's. The incentives to relocate to cold, distant areas worked through the system of the Northern compensations, preferential system of distribution of housing, creation of urban infrastructure in new locations. Millions of people were subsidized to live in "cold" (Hill and Gaddy, 2003).

After removal of most of the benefits, the population responded by out-migration from cold areas. More than a million people left the Northern regions since 1990. The population of Magadan and Chukotka, two of the coldest places in Russia, declined by 53 and 66 percent respectively between 1991 and 2001. Still, the self-correction of distortions created by the central planners is slow and a considerable part of population in modern Russia still lives in cities that would have never been built in a market economy.

3.2 Mobility in transition

Since the transition started, all countries of the region abandoned urban policies that distorted the market equilibrium, but the convergence is slow, primarily due to low mobility of population in the region relative to mobility in the developed market economies. For example, "on average Russians

[8] Rural residents did not have passports until 1974

[9] In the estimation of the rank-size regression for 500 Soviet cities, ten of the eleven largest cities are major outliers – their actual sizes are well below the predicted sizes.

change their place of residence 1.5 times during their lifetime compared to 13 times in the U.S. and 7 times in Britain (p. 61)"[10] Even more disturbing, internal mobility is declining despite an increase in the inequality across regions. Andrienko and Guriev (2004), who study intra-Russian migration rates, find that mobility has been declining in 1992-1999. The low mobility in Russia cannot be attributed to income equalization across regions. To the contrary, Mitra and Yemtsov (2006) report: "As opposed to relatively stable sectoral and inter-industry wage differentials, regional variation in real wages, relative to the national average, almost tripled in Russia between 1995 and 2003. Segmentation of labor markets is a common feature of many transition economies, but in Russia this dispersion takes particularly extreme forms due to institutional, infrastructure and geographical realities." Yemtsov (2005), using official per capita income data series, shows that between-regional factors among Russia's eighty-plus regions accounted for about a third of the overall inequality in that country by the year 2000, with the increase in the between regions component being the key driver of the change in inequality between 1995 and 2000. Fedorov (2002) computed that the Gini coefficient of intra-regional inequality in Russia in 1999 was 0.29 compared with the intra-state Gini coefficient in US around 0.10 (Milanovic, 2005).

Other countries of the region follow similar migration trends. WorldBank (2009) reports that migration flows in Eastern Europe and CIS countries have slowed down despite increasing differences in income levels and quality of life. Internal migration in the Czech Republic, Poland, and Slovakia is 0.5 percent of working population which is low by the EU standards: it is three times lower than in Germany and five times lower than in France, the Netherlands, and the UK. Deichmann and Henderson (2000) find that in Poland the largest cities growth is slower than would be expected under freely operating post-transition adjustments. They link it primarily to low internal mobility, with rural-to-urban migration declining significantly between 1986 and 1998.

The low and declining mobility in the region can be, at least partially, explained by rigidities in still over-regulated and inefficient markets for housing, local government services, utilities, and transportation (Buckley and Mini, 2000). Coricelli and Hagemeyer (1995) estimate that up to 20 percent of unemployment in Poland is due to housing market rigidities. There was a dramatic drop in housing completion in Poland from 140,000 in 1992 to 60,000 in 1996. More recent analysis of internal migration in Poland by Ghatak et al. (2008) confirms that the shortage of housing remains one of the most important barriers to migration within Poland which slows down growth of large cities in Poland and lowers productivity and economic growth.

The situation with low mobility in the ECA region is worsened by the government policies that preserve the current status quo through unemployment benefits and direct subsidies to depressed regions, job protection regulations, and nationwide minimum wage laws. Transfer of housing ownership from state to residents at low or no cost during the early stages of transition and no tax on land or real estate property in some countries (i.e. Ukraine) makes the housing and land markets more rigid and less liquid which further lowers the labor force mobility. Under-provision of local public services and utilities is reflected in the structure of household expenditures. While in market

[10] Rautio and Tykkyläinen (2008).

economies the share of those services lays within 43 to 63 percent range, in transition countries it is only 23 to 30 percent. Inadequate transport infrastructure can be linked to the socialist urban policy heavily relied on the system of public transportation that does not work well in a free market system due to lack of funding and increasing rates of private motorization.

3.3 Housing and land markets

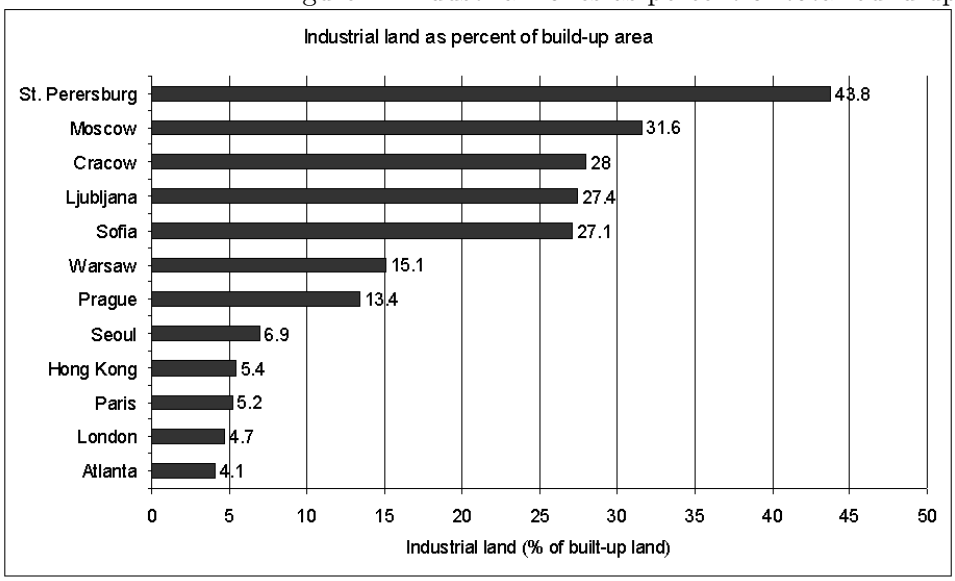
Absence of liquid land and housing markets in the centrally planned economies without private property on land and housing led to inefficient land use, inadequate housing stock, and lack of institutions and services that support transactions in those markets. There are mixed evidence on the existence of the housing market in the socialist countries. Alexeev (1988) finds that housing conditions in the Soviet Union were sensitive to income. This result is considered by the author as an indication that the Soviet households were able to beat the system of non-market distribution of housing: even though the primary allocation of housing was economically inefficient, based on needs and merits system; the secondary housing market allocated housing efficiently, based on such economic characteristics as household income. However, a later study by Buckley and Gurenko (1998)) using richer data find no effect of income on distribution of housing, which indicates lack of market forces in the allocation of housing under the socialism. Low quality of housing, standardization of demand, and direct restrictions on demand for housing in socialist cities[11], further distorted the housing market in the socialist countries.

After years of reforms, the housing market liberalized considerably. However, the soviet legacy of existing stock of housing, peculiarities of housing demand, and monopolization of construction industry create considerable distortions to the market structure that is far from competitive. Becker and Hemley (1998) report a negative impact of housing restrictions on poor demographic situation in Russia. They have estimated that a fifteen squared meter increase in living space of the household would lead to an extra birth. The lack of office space in the highly populated areas is the direct consequence of the prevalence of housing units built without space for commercial use. Lack of reforms, poorly defined property rights, and lack of the digitized information on property lead to substantial transaction costs and poor investment climate that hinders investments in real estate.

The price mechanism in the market economy exerts a powerful influence on land use recycling, replacing inefficient and obsolete land use by more efficient and modern land use. An increase in prices of land in the inner part of the city drives out the inefficient businesses and obsolete structures, and increases job and population densities in those areas. Under the administrative-command economy, the absence of land price mechanism eliminates incentives to re-develop. Administrators that do not act as land use value maximizers respond to the changes in demand for land use by developing construction-free areas at the outskirts of the city because it minimizes construction costs. "Socialist planners made investment and location decisions under a system in which land had no value, capital had no interest opportunity cost, and energy prices were a tiny fraction of loan

[11] A couple with minor children could own only one dwelling, which could not provide more than 60 m2 of living space Alexeev (1988).

Figure 2: Industrial zones as percent of total build-up



Source: Bertaud, 2004

prices. Since enterprises could not capture any gain from redevelopment or conversion of land to highest and best use, socialist cities often had a pattern of sprawling industrial plants, often using what would be the highest value and highest density office and residential land use under any kind or market system" (Malpezzi, 1999).

The absence of land markets in socialists cities, according to Bertaud and Renaud (1997), lead to: positive population density gradient when the most population-dense areas are located in the outer areas of the city but remoteness of housing is not compensated by better amenities such as larger houses, better environment that are typical for capitalist cities; larger share of city area is allocated to land-intensive industrial use, often occupied by obsolescent industries located in prime areas of the city – build-up land used by industries occupies 31% of all land in Moscow compared with 5% of all land in Paris, 6% of all land in Seoul, and 5% of all land in Hong-Kong (Figure 2); residential areas are concentrated in the periphery, which put additional stress on transport infrastructure.

Bertaud and Renaud (1997) compare Paris and Moscow, cities of the similar size, in terms of their land use and population densities and report that the median distance to the center is 7 kilometers for Paris and 10 kilometers for Moscow due to higher population density in the inner part of Paris and higher population density in the outer parts of Moscow. Longer commuting distances and concentration of the households in the periphery in Moscow, while jobs are mostly located in the inner areas of Moscow, require more investments in transport infrastructure and creates higher congestion and greater share of labor time waste. High share of land occupied by land-intensive and outdated industries in Moscow means underused land near the city center, fragmented access due to dense network of rail-roads required to serve the industrial zones, crowding-out of new, technology intensive industries and services to the outer parts of the city.

Table 5: Taxonomy of progress in transition countries

	Institutions		Safety Net		Private Sector Development		
	Political accountability of local governments	Transparency and economic autonomy of local governments	Pricing of services	Effective allocation of social mandates	Effective real estate markets	Financial sector development	Overall rating
Central and Eastern Europe	3.0	2.0	2.5	2.5	3.0	3.0	2.7
The Baltics	3.0	2.0	2.5	2.5	2.5	2.5	2.5
Central and South Balkans	1.5	1.0	2.0	2.0	2.5	2.0	1.8
Former Soviet Union	1.0	1.0	1.0	1.0	1.5	1.0	1.1

Source: Buckley and Mini (2000), From Commissars to Mayors: Cities in Transition Countries
Notes: The scale is from 1 to 4 where higher numbers represent better score.

3.4 Local governance

Development of institutions and efficient governance in transition economies also proved to be a major challenge for reformers. Buckley and Mini (2000) discuss progress of transition countries in local institution-building, safety net development, and private sector development. Based on the literature, the main challenge of public policy reforms in the ECA region is to outline the clear boundaries that separate responsibilities among various branches of government both vertically, between the state and local governments, towards a larger independence, transparency and accountability of local governments, as well as horizontally, between various local jurisdictions to prevent the overlapping responsibilities and resolve a potential conflict of interest between urban and regional administrations that may emerge due to urban sprawl.

A low accountability and transparency of local governments is another important challenge to local economic development. It is still well below the levels of accountability and transparency in developed countries. The local administrations are often appointed by the state or by local legislative branches of the government which reduces their local accountability. Buckley and Mini further summarize their findings by presenting the progress of transition countries in various aspects of local reforms which is summarized in Table 5. Central and Eastern European counties lead in the progress of local reforms in all dimensions of local governance reforms – political accountability and transparency of the local government, safety net provision, and private sector development – while the former Soviet Union countries considerably lag behind.

A recent study by Stastna and Gregor (2010) examines the extent of cost inefficiency of local governments in a sample of 202 municipalities of extended scope in the Czech Republic in the period 2003–2008. The exogenous variables that robustly increase inefficiency are population size, distance to the regional center, share of university-educated citizens, capital expenditures, subsidies per capita, and the share of self-generated revenues. Concerning political variables, increase in party

concentration and the voters' involvement increases efficiency, and local council with a lower share of left-wing representatives also tend to be more efficient. A comparative analysis, conducted for the period 1994–1996, reveals that small municipalities improve efficiency significantly more than large municipalities. As a result, initially low differences between medium-size and large municipalities have magnified over time. More inefficient local governments in large municipalities can be another factor that explains the smaller than expected prime cities in the ECA region.

3.5 Impact of housing and governance on mobility

In order to assess the impact of market rigidities on mobility within the last decade, I use The Life in Transition Survey (LITS) II conducted by the European Bank for Reconstruction and Development (EBRD) and the World Bank in 2010. It surveyed almost 39,000 households in 34 countries, including all transition countries.[12] As a reference group, households in France, Germany, Italy, the UK, and Sweden were surveyed, which gives a much needed basis for comparison. I keep the observations on households located in urban and metropolitan areas and aggregate the data to the level of the primary sampling unit (PSU). Table 6 reports summary statistics of the key variables at the PSU level in Panel A and housing conditions within the area at the household level in Panel B.

There is a striking contrast in mobility between the Western Europe and the other regions. While 25 percent of respondents in the Western Europe moved into the urban area within the last 5 years, the mobility in the other regions is only 9-13 percent. The Western Europe also has the highest shares of households that rent and households with mortgage. The most common way of acquiring a dwelling in the Western Europe is purchase with mortgage (61 percent), while in the CIS and Mongolia region the most common ways are either purchase without mortgage (35 percent) or privatization (33 percent).

In analyzing the determinants of mobility, I use a linear model

$$mobility_{i,T} = \alpha + H_i\beta + O_i\gamma + R_i\delta + G_i\pi + D_c + \epsilon_i, \tag{3}$$

where $mobility_{i,T}$ represents the share of respondents that moved into the urban area i within the last T years; H is a vector of characteristics of the housing stock in the area i; O is a vector of housing market conditions (share of rented housing and share of households with mortgage); R is a vector of labor demand and supply characteristics of the urban area (average education level, unemployment level, share of self-employed, share of employed by state enterprises), G is a measure of local government quality; D_c denote a set of country fixed effects; and ϵ_i is an independently distributed error term. The model is estimated by Tobit, because the dependent variable is censored and takes values from 0 to 1.[13]

Table 7 reports the estimates of model (3). Two variables that measure how well the housing

[12]The LITS II is available online at http://www.ebrd.com/pages/research/economics/data.

[13]I also estimated the model by the ordinary least squares, which does not require the assumption of normality of the error term. The results are similar and available upon request.

	Western Europe	Central and Eastern Europe	Southern Europe	CIS and Mongolia	Total
		A: Summary statistics			
Share of households moved in	0.149	0.068	0.044	0.065	0.075
within last 5 years	(0.15)	(0.10)	(0.06)	(0.08)	(0.10)
Share of households moved in	0.253	0.121	0.088	0.126	0.138
within last 10 years	(0.19)	(0.14)	(0.08)	(0.13)	(0.14)
Share of households moved in	0.325	0.155	0.130	0.163	0.181
within last 15 years	(0.20)	(0.15)	(0.11)	(0.15)	(0.17)
Share of detached houses	0.374	0.334	0.378	0.288	0.336
	(0.32)	(0.39)	(0.38)	(0.39)	(0.38)
Share of townhouses	0.255	0.057	0.074	0.028	0.085
	(0.30)	(0.15)	(0.15)	(0.09)	(0.19)
Share of rented housing	0.375	0.187	0.113	0.101	0.174
	(0.25)	(0.20)	(0.11)	(0.11)	(0.19)
Share of households with	0.263	0.080	0.042	0.021	0.083
mortgage	(0.18)	(0.11)	(0.06)	(0.04)	(0.13)
$\ln(Monthlyrent)$	6.825	5.540	5.245	4.948	5.497
US dollars	(0.36)	(0.68)	(0.55)	(0.80)	(0.92)
Share of unemployed	0.090	0.121	0.168	0.148	0.135
	(0.11)	(0.15)	(0.14)	(0.17)	(0.15)
Education level	4.210	4.003	4.138	4.856	4.348
	(0.82)	(0.75)	(0.66)	(0.62)	(0.79)
Share of self-employed	0.120	0.111	0.127	0.172	0.136
	(0.14)	(0.15)	(0.15)	(0.17)	(0.16)
Share of employed by state	0.330	0.381	0.437	0.563	0.445
enterprises	(0.27)	(0.29)	(0.26)	(0.28)	(0.29)
Level of satisfection with	3.327	3.134	2.844	3.052	3.074
local government	(0.49)	(0.53)	(0.59)	(0.50)	(0.55)
Observations	181	294	244	349	1068
		B: Housing conditions			
		Type of dwelling, percent			
Detached house	36.6	42.98	55.13	50.97	
Townhouse	22.45	8.09	7.63	2.78	
Apartment	40.46	48.54	36.93	43.23	
		Type of ownership, percent			
Rented	34.61	14.67	8.02	6.39	
Owned	63.99	82.5	90.25	90.99	
		How dwelling was aquired, percent			
Privatized	15.9	16.7	10	33.02	
Purchased with mortgage	60.59	14.52	15.48	3.55	
Purchased without mortgage	11.27	35.48	38.3	34.86	
Cooperative	0.31	5.82	1.04	1.99	
Inherited	10.02	24.87	34.03	25.23	
		Mortgatge currently, percent			
Yes	41.57	8.65	3.87	1.78	
No	58.38	91.35	96.13	98.2	

Table 6: Summary statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of detached houses	0.057***	0.017	0.0026	0.026	0.014	-0.0085	0.0086	0.15**
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.05)	(0.02)	(0.06)
Share of townhouses	0.0055	-0.061*	-0.067*	-0.052	-0.097**	0.13	-0.076*	0.14
	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.08)	(0.04)	(0.10)
Share of rented housing	0.36***	0.35***	0.29***	0.36***	0.39***	0.21***	0.35***	0.29**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.06)	(0.06)	(0.1)
Share of mortgages	0.32***	0.25***	0.15***	0.27***	0.25***	0.23**	0.30***	0.13
	(0.05)	(0.06)	(0.05)	(0.06)	(0.06)	(0.1)	(0.09)	(0.2)
Unemployment	0.013	0.0094	-0.0058	-0.013	0.013	-0.028	0.10**	-0.070
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.08)	(0.05)	(0.1)
Average education level in locality	0.026***	0.0064	0.0010	0.0041	0.011	-0.00071	0.0094	0.063***
	(0.007)	(0.009)	(0.008)	(0.010)	(0.01)	(0.02)	(0.01)	(0.02)
ln($Monthlyrent$)	-0.0034	0.0038	0.0041	0.0081	0.017	-0.056***	0.016	0.0074
	(0.007)	(0.009)	(0.008)	(0.009)	(0.01)	(0.02)	(0.01)	(0.02)
Share of self-employed	0.099***	0.057*	0.024	0.086**	0.070*	0.022	0.090*	0.27*
	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.07)	(0.05)	(0.1)
Share of employed by state-owned enterprises	-0.0020	-0.0055	-0.012	-0.0011	-0.0030	-0.021	-0.0023	-0.0014
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.02)	(0.09)
Average appoval of local government in locality	0.0047	0.0044	0.0030	0.0039	0.0061	-0.011	-0.0088	-0.035
	(0.009)	(0.009)	(0.009)	(0.010)	(0.01)	(0.02)	(0.01)	(0.04)
Country effect	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Log like.	181.9	309.8	173.5	322.1	250.7	84.8	348.0	53.6
Observations	1068	1068	1068	1068	828	226	503	35

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Determinants of population mobility

market is functioning in the urban area – the share of rented housing and share of households with mortgages – are consistently positive and significant across all model specifications. Based on the estimates of the baseline model specification in column (2) of the table, a standard deviation increase in the share of rented housing in a city of the ECA region is associated with a 50 percent closing the gap in mobility between Western Europe and ECA, while a standard deviation increase in the share of mortgaged dwellings is associated with a 25 percent closing the gap in mobility. Average approval of the local government, on the other hand, is never significant. However, the variable is a subjective measure and the reference point for what does good local government mean may considerably differ across countries. The structure of the housing stock is rarely a significant determinant of mobility.

Column (1) reports the estimates with the share of households that moved in in the last 10 years and does not include country fixed effects. The specification allows using cross-country variation to identify the effect of variables that do not vary much within a country (structure of the housing stock, education, and quality of local governance) and can be interpreted as the long run effect estimates. Column (2), the baseline specification, adds country fixed effects, to control for cross-country differences in the level of development, education, institutions, and particularities of the housing stock. Columns (3) - (4) present the baseline specification for mobility measured with T equals 5, and 15 years consequently. The economic size of the effect of the housing market is increasing when we look at the longer horizon measures of mobility. However, this result should be taken with caution because the reverse causality problem becomes more severe once we look at longer periods. In columns (5) and (6), I split the sample into the households living in urban and metropolitan areas consequently.

The LITS survey is representative at the country level, but not at the PSU level. To address the issue of a measurement error, I report the baseline specification results for more aggregated data – at the regional level (roughly equivalent to NUTS 2 digit according to the European classification of regions) in column (7) and at the national level in column (8). The share of mortgages retains its positive sign but loses its significance, perhaps due to the small sample size. The share of rented housing, on the other hand is still significant. Also, the differences in educational level across countries start playing a role in explaining mobility, which is consistent with the model at the PSU level without country fixed effects in column (1).

Based on the results, I conclude that there is a strong and robust positive correlation between population mobility and availability of rented housing. Another robust factor that is associated with high mobility is the share of households with mortgages. As a policy implication, stability of macroeconomic environment and development of the financial system might increase population mobility through better provision of affordable mortgages. Of course, these findings should be taken with care due to endogeneity and measurement issues, which are not fully resolved in this analysis, but as the first step it gives a valuable insight into the causes of low population mobility in the region.

4 Policy implications of under-urbanization

4.1 Agglomeration and localization economies

Underdevelopment of prime cities in transition countries prevents them from capitalizing on the agglomeration economies. Smaller agglomerations have less productive firms, fewer innovative activities, fewer opportunities for human capital development, and less efficient labor markets. Marshall (1890) identifies three main micro-foundations of agglomeration economies: labor market pooling (better match and reduced risk), knowledge spillovers (localized learning), and input sharing (internal increasing returns to scale). In addition, the natural advantage, home market effect, consumption opportunities, and rent-seeking all can contribute to agglomeration (Rosenthal and Strange, 2004). Based on the extensive literature review summarized in Table 8, Rosenthal and Strange (2004) conclude that doubling of a city size increases productivity of firms located in the city by 3-8%. Separation of localization (within an industry agglomeration) and urbanization (impact of city size across all industries) effects, carried out by Nakamura (1985) for Japan, reveals that doubling of an industry scale leads to a 4.5 percent increase in productivity, while doubling of a city population leads to a 3.4 percent increase in productivity. Ciccone and Hall (1996) find a positive effect of the population density on productivity. Doubling of population density increases productivity by 6 percent for the US. Ciccone (2002) further finds that the effect is 4.5 percent for a cross-section of regions in France, Germany, Italy, Spain and the UK. Moretti (2004) finds that a percentage point increase in the share of college students in a city raises average wages by 0.6-1.2%, above and beyond the private returns to education.

A meta-analysis of the literature on the relationship between urbanization and productivity by Melo et al. (2009) reveals that the effect is region- and country-specific, with China, Japan, and Sweden having lower returns and the US, France, and Italy having higher returns. Au and Henderson (2006) argue that restrictions on rural to urban migration in China explain insufficient agglomeration of economic activity. Also, the urban agglomeration impact on productivity is stronger in the services sector which is consistent with the notion that services strongly benefit from proximity to large urban markets.

Research on agglomeration economies in cities of the ECA region is scares. The estimated agglomeration effects are found to be stronger than for the OECD countries. Békés and Harasztosi (2010), looking at Hungarian manufacturing data from 1992 to 2003, find that firms that are engaged in international trade would gain 16 percent in total factor productivity as the city size doubles, a number that is twice larger that the upper bound for the consensus estimate presented by Rosenthal and Strange (2004). Bruhart and Mathys (2008) find that the impact of population density on labor productivity in Europe in 1980-2003 has been constantly growing over time, mainly due to higher impact of density on productivity in the Eastern European regions.[14] Vakhitov (2010) , looking at the Ukrainian firm level data in 2001-2005, confirms that the agglomeration effect is higher in the ECA region. While the higher agglomeration effect in transition countries is expected, due to

[14]Inclusion of the Eastern European regions rises the impact from 4 percent to 13 percent.

Table 8: Literature on sources of agglomeration

Micro-foundation	Paper	Main finding
Input sharing	Holmes (1999)	More purchased input in clusters
Labor market pooling	Diamond and Simon (1990)	Workers compensated with higher wages
	Costa and Kahn (2000)	Well-educated married prefer large cities
Knowledge spillovers	Jaffe et al. (1993)	More citations in the same location
	Duranton and Puga (2001)	Cities are "nurseries" for new ideas
	Moretti (2004)	More college graduates raises wages

Source: Rosenthal and Strange (2004)

the dynamic nature of transition from the command economy to the market economy, these results should be taken with care because of noisier data, effect of restructuring that is hard to separate from the effect of urbanization, and higher inflation rates. Still, the results indicate that further grows of the prime cities in the region would generate substantial and positive agglomeration externalities.

4.2 Poverty and social instability in urban areas

Declining industrial production in the ECA region during the 90's hits urban population particularly hard, leading to a high incidence of poverty in the urban areas. According to Alam et al. (2005), in Moldova, Armenia, Azerbaijan, and Georgia the poverty rate in the urban areas is higher than in the rural areas – the fact rarely observed in developing countries. Macours and Swinnen (2008) present comparative analysis of urban-rural gap in poverty in 23 transition countries of the ECA region. First, the urban poverty is generally lower than rural poverty. However, there is high variability of the urban-to-rural poverty ratio across transition countries. Urban poverty is higher in Belarus, Armenia, and Azerbaijan. The highest gap between the urban and rural poverty (50 percent lower chance of poverty in the urban area) is observed in Romania, Latvia, Lithuania, and Bulgaria. The income gap between urban and rural poverty translates to non-income poverty indicators, such as lower infant mortality in urban areas of Bulgaria, Romania, Russia, and Central Asia. Second, the urban-to-rural poverty gap is increasing in the middle-income countries of the region. Breaking the poverty into components, a wage increase is quite equal in rural and urban areas, while access

and availability of services and infrastructure are much better in urban areas in all countries of the region. "While rural areas might have had less access to services even before 1990, service quality and availability often decreased during transition as high quality service providers migrated from the rural areas to the cities or abroad." (Macours and Swinnen, 2008) In most countries of the region, migration of the younger, more skilled, population to urban areas lead to a human capital advantage and consequently to the large wage differentials.

Factors that contributed to the high incidence of urban poverty in the region are reduction of subsidies to urban infrastructure, several-fold increase in the share of housing and utilities in total expenditures, overall deterioration of urban infrastructure due to poor maintenance, and unequal access of urban population to the quality services and utilities. The secondary cities of the region have even higher incidence of poverty – risk of being poor in the secondary city is two to four times higher relative to the prime cities. Main factors contributing to probability of being poor in the region at the micro level are a low level of education of the head of the household and large family size. Urban population is also more vulnerable to the macroeconomic shocks – urban poverty in Russia, Moldova, Armenia, and Georgia increased sharply during the economic crisis of 1998 (Alam et al., 2005).

In addition to the economic problems, the soviet urban policies of encouraging labor migration of Russian speaking population to the national republics, the Baltic States in particular, has created social tension after the breakdown of the Soviet Union. Balockaite (2010) discusses social and psychological problems the Russian speaking population of Visaginas, Lithuania is facing even after twenty years of the transition period. Lost in transition, previously considered as the elite of the Soviet working class, the workers of the nuclear power station are struggling to find their new identity.

5 Conclusions

This paper outlines a number of challenges faced by cities in transition. Even though the urbanization rates in most countries of the ECA region are in line with the urbanization rates in other countries at the similar levels of development, the evidence indicate that the largest cities of the region should continue to grow at higher rates relative to the medium- and small-sized cities to converge to the levels consistent with the market-based spatial equilibrium. Under-populated prime cities in the region fail to capitalize on the agglomeration economies to a full extent. This, in turn, compromise the global competitiveness of local firms, reduce attractiveness of the region for investors, and lead to brain drain of high-skilled workers who prefer more densely populated agglomerations of the US and European Union.

Growing regional inequalities coupled with declining labor mobility in the region constitutes an empirical puzzle specific to the ECA countries. Most researchers point out that the markets with the largest rigidities that could explain the paradoxical pattern of increasing regional inequality and declining labor mobility are the housing and land markets. The paper provides new evidence on the

importance of the efficient housing market for high population mobility. Other important determinants of urban development are properly functioning land markets and efficient local governments. More successful countries of the region in terms of the urban development also have more efficient and transparent local governments. Therefore, decentralization and further democratization of the local administrations is a priority for successful urban development in the region.

References

Acemoglu, D., Johnson, S., and Robinson, J. (2002). Reversal of fortune: Geography and institutions in the making of the modern world income distribution. *Quarterly Journal of Economics*, 117(4):1231–1294.

Ades, A. and Glaeser, E. (1995). Trade and circuses: explaining urban giants. *The Quarterly Journal of Economics*, 110(1):195–227.

Alam, A., Murthi, M., and Yemtsov, R. (2005). *Growth, poverty, and inequality: Eastern Europe and the former Soviet Union*. World Bank Washington, DC.

Alexeev, M. (1988). Market vs. rationing: the case of Soviet housing. *The Review of Economics and Statistics*, 70(3):414–420.

Andrienko, Y. and Guriev, S. (2004). Determinants of interregional mobility in Russia. *Economics of Transition*, 12:1–27.

Au, C. and Henderson, J. (2006). How migration restrictions limit agglomeration and productivity in China. *Journal of Development Economics*, 80(2):350–388.

Balockaite, R. (2010). Post-Soviet transitions of the planned socialist towns: Visaginas, Lithuania. *Studies of Transition States and Societies*, 2.

Becker, C. and Hemley, D. (1998). Demographic change in the former Soviet Union during the transition period. *World Development*, 26(11):1957–1975.

Békés, G. and Harasztosi, P. (2010). Agglomeration premium and trading activity of firms. *CeFiG Working Papers*.

Bertaud, A. and Renaud, B. (1997). Socialist cities without land markets. *Journal of Urban Economics*, 41(1):137–151.

Bosker, M., Brakman, S., Garretsen, H., and Schramm, M. (2007). Looking for multiple equilibria when geography matters: German city growth and the WWII shock. *Journal of Urban Economics*, 61(1):152–169.

Bruhart, M. and Mathys, N. (2008). Sectoral agglomeration economies in a panel of european regions. *Regional Science and Urban Economics*, 38(4):348 – 362.

Buckley, R. and Gurenko, E. (1998). Housing demand in Russia: Rationing and reform. *Economics of Transition*, 6:197–210.

Buckley, R. and Mini, F. (2000). *From commissars to mayors: cities in the transition economies*. World Bank Publications.

Ciccone, A. (2002). Agglomeration effects in Europe. *European Economic Review*, 46(2):213 – 227.

Ciccone, A. and Hall, R. (1996). Productivity and the density of economic activity. *The American Economic Review*, 86(1):54–70.

Clayton, E. and Richardson, T. (1989). Soviet control of city size. *Economic Development and Cultural Change*, 38(1):155–165.

Coricelli, F, K. R. and Hagemeyer, K. (1995). *Poland, In Simon, Commander, and Coricelli, eds., Unemployment Restructuring and the Labor Market in Eastern Europe and Russia*. World Bank EDI Development Studies, Washington D.C.

Costa, D. and Kahn, M. (2000). Power couples: Changes in the locational choice of the college educated, 1940-1990. *Quarterly Journal of Economics*, 115(4):1287–1315.

Davis, D. and Weinstein, D. (2002). Bones, bombs, and break points: The geography of economic activity. *The American Economic Review*, 92(5):1269–1289.

Davis, J. and Henderson, J. (2003). Evidence on the political economy of the urbanization process. *Journal of Urban Economics*, 53(1):98–125.

Deichmann, U. and Henderson, V. (2000). Urban and regional dynamics in Poland. *Policy Research Working Paper Series*.

Diamond, C. and Simon, C. (1990). Industrial specialization and the returns to labor. *Journal of Labor Economics*, 8(2):175–201.

Duranton, G. and Puga, D. (2001). Nursery cities: Urban diversity, process innovation, and the life cycle of products. *The American Economic Review*, 91(5):1454–1477.

Fedorov, L. (2002). Regional inequality and regional polarization in russia, 1990-99. *World Development*, 30(3):443 – 456.

Gabaix, X. (1999). Zipf's Law For Cities: An Explanation. *Quarterly Journal of Economics*, 114(3):739–767.

Gang, I. and Stuart, R. (1999). Mobility where mobility is illegal: Internal migration and city growth in the Soviet Union. *Journal of Population Economics*, 12(1):117–134.

Ghatak, S., Mulhern, A., and Watson, J. (2008). Inter-regional migration in transition economies: the case of Poland. *Review of Development Economics*, 12(1):209.

Glaeser, E. and Gottlieb, J. (2009). The wealth of cities: agglomeration economies and spatial equilibrium in the United States. *Journal of Economic Literature*, 47(4):983–1028.

Henderson, V. (2003). The urbanization process and economic growth: The so-what question. *Journal of Economic Growth*, 8(1):47–71.

Hill, F. and Gaddy, C. (2003). *The Siberian curse: How communist planners left Russia out in the cold*. Brookings Inst Pr.

Holmes, T. (1999). Localization of industry and vertical disintegration. *Review of Economics and Statistics*, 81(2):314–325.

Iyer, S. (2003). Increasing unevenness in the distribution of city sizes in Post-Soviet Russia. *Eurasian Geography and Economics*, 44(5):348–367.

Jaffe, A., Trajtenberg, M., and Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations. *the Quarterly Journal of Economics*, 108(3):577–598.

Macours, K. and Swinnen, J. (2008). Rural-urban poverty differences in transition countries. *World Development*, 36(11):2170–2187.

Malpezzi, S. (1999). Economic analysis of housing markets in developing and transition economies. *Handbook of Regional and Urban Economics Volume III*, pages 1791–1864.

Marshall, A. (1890). *Principles of economics*. Macmillan.

Melo, P., Graham, D., and Noland, R. (2009). A meta-analysis of estimates of urban agglomeration economies. *Regional Science and Urban Economics*, 39(3):332–342.

Mikhailova, T. (2010). Looking for multiple equilibria in Russian urban system. *mimeo*.

Milanovic, B. (2005). Half a World: Regional inequality in five great federations. *Journal of the Asia Pacific Economy*, 10(4):408–445.

Mitra, P. and Yemtsov, R. (2006). *Increasing Inequality in Transition Economies: Is there more to come?* World Bank.

Moretti, E. (2004). Estimating the social return to higher education: evidence from longitudinal and repeated cross-sectional data. *Journal of econometrics*, 121(1-2):175–212.

Nakamura, R. (1985). Agglomeration economies in urban manufacturing industries: a case of Japanese cities. *Journal of Urban Economics*, 17(1):108–124.

Ofer, G. (1976). Industrial structure, urbanization, and the growth strategy of socialist countries. *The Quarterly Journal of Economics*, 90(2):219–244.

Rautio, V. and Tykkyläinen, M. (2008). *Russia's Northern Regions on the Edge: Communities, industries and population from Murmansk to Magadan.* Helsinki, Finland: University of Helsinki, Aleksanteri Institute, Kikimora Publications.

Rosenthal, S. and Strange, W. (2004). Evidence on the nature and sources of agglomeration economies. *Handbook of regional and urban economics*, 4:2119–2171.

Stastna, L. and Gregor, M. (2010). Local government efficiency: Evidence from the Czech municipalities. *mimeo.*

Vakhitov, V. (2010). Are There Urbanization Economies in a Post-Socialist City? Evidence from Ukrainian Firm-Level Data. *mimeo.*

WorldBank (2009). *World Development Report 2009: Reshaping Economic Geography.* World Bank Publications, Washington 2009.

Yemtsov, R. (2005). Quo vadis? Inequality and poverty dynamics across Russian regions. *Spatial Inequality and Development*, page 348.